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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,393	04/01/2004	Virinder Mohan Batra	CHA920040003US1	9578

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EXAMINER	
SMITH, CAROLYN L	

ART UNIT	PAPER NUMBER
1631	

NOTIFICATION DATE	DELIVERY MODE
09/19/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOCommunications@hoffmanwarnick.com

Office Action Summary	Application No.	Applicant(s)	
	10/816,393	BATRA ET AL.	
	Examiner	Art Unit	
	Carolyn L. Smith	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission, filed 6/23/08, has been entered.

Amended claims 1-8 and 11-19, filed 6/23/08, are acknowledged.

Claims herein under examination are 1-8 and 10-20.

Claims Rejected Under 35 U.S.C. § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7 and 14-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Claims 1 (last four lines) and 14 (last four lines) recite "outputting the electronic version of the nucleotide chain sequence, including the encrypted exons and the unencrypted introns, wherein the encrypted exons are decrypted by a secure process to regenerate the nucleotide chain sequence" and "outputting the encrypted exons and the non-encrypted introns over the network,

wherein the encrypted exons are decrypted by a secure process to regenerate the nucleotide chain sequence", respectively. It is unclear if encrypted exons and the decrypted exons are both outputted. For example, it states outputting including the encrypted exons, but then states the encrypted exons are decrypted. Clarification of this issue via clearer claim wording is requested. Claims 2-7 and 15-16 are also rejected due to their dependency from claims 1 and 14.

Claim 2 recites the limitation "the system for outputting" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. While there is previous mention of "outputting", there is no previous mention of a "system for outputting". Clarification of this issue via clearer claim wording is requested. Claims 3-4 and 6-7 are also rejected due to their dependency from claim 2.

Claims 2-7 recite "the system for" and/or "a system for" limitations that are vague and indefinite. It is unclear if the "system for" limitations are intended to be programs or physical structural unit limitations. Clarification of this issue via clearer claim wording is requested.

Applicant argues claim 1 has been amended to recite physical structural limitations to improve the clarity of claim 1. While claim 1 is now clear, it is still unclear if the "system for" limitations of claims 2-7 are intended to be physical limitations (i.e. structural units) of the security system or programs performed by the security system of claim 1.

Claim 5 recites the limitation "the system for selectively encrypting" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. While there is previous mention of "selectively encrypting", there is no previous mention of a "system for selectively encrypting". Clarification of this issue via clearer claim wording is requested.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6-8, 10-12, 14, 15, 17, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rungsarityotin et al. (Pure Appl. Chem., 2002, Vol. 74, No. 6, pages 891-897) in view of Patten et al. (US 6,531,316 B1) with additional support from the Merriam-Webster online dictionary ("encrypt", "encode", "encipher", and "cipher").

The Merriam Webster online dictionary defines "encrypt" as "encipher or encode". The term "encode" means "to specify the genetic code for" or "converting a message into code" (see Merriam-Webster online dictionary). The term "encipher" means to convert into cipher ("a combination of symbolic letters" or "a message in code") (see Merriam-Webster online

dictionary). These definitions are not being used as prior art, but rather to support the definitions of these terms.

Rungsarityotin et al. describe a grid-enabling software technology with a grid security system including a computer processor as well as interface and storage system (i.e. memory) and method featuring a security infrastructure to transform bioinformatics genomic data from different sites to a standard format (page 892, fourth paragraph to page 893, first paragraph and Figure 1) including visualizing, analyzing, and transporting XML-based DNA data (abstract) which represents a computer-implemented security system for securing an electronic version of a nucleotide chain sequence comprising a portion of an organism's genome, as stated in the preamble of claims 1 and 8, as well as a computer hardware apparatus and program as stated in instant claim 1. Rungsarityotin et al. describe exchanging information on a particular gene or coding regions (i.e. exons) (abstract), integrating a physical map of BAC sequence from a rice chromosome (Figure 2), using BAC-end sequences and BAC fingerprint contigs and linking critical regions of interest onto a sequence-ready map (page 894, first paragraph) which represents identifying coding (i.e. exons) and non-coding regions in the nucleotide chain sequence, as stated in instant claims 1, 8, 14, and 17. Rungsarityotin et al. describe using expressed sequence tags (ESTs) treated as genes and marker names (i.e. AP002882 and RZ69) (in Figure 2 and page 894, first paragraph) along the sequence with non-coding regions merely listed as a line (Figure 2) and providing security over a network (page 892, last three paragraphs; abstract; and Figure 1) which represents selectively encrypting the sequence of only the exons identified in the nucleotide chain to provide security over a network, as stated in instant claims 1, 8, 14, and 17. Rungsarityotin et al. describe visualizing DNA data, a method featuring a security

infrastructure to transform bioinformatics genomic data from different sites to a standard format (page 892, fourth paragraph to page 893, first paragraph and Figure 1), communication between several sources of data and XML-based DNA transported for further representation and transforming XML documents (abstract; Figures 1, 2, 4) including textual or graphical output (Figure 2 caption) which encompasses the outputting, as stated in instant claims 1, 2, 8, 14, and 17. Rungsarityotin et al. describe transporting these XML-based DNA data and using a Web browser and Web-based viewer (abstract and Figure 2), as stated in instant claims 2-4, 8, 11, 12, 15, and 18. Rungsarityotin et al. describe grid technologies and recording DNA sequencing data in computerized databases to facilitate analysis, storage and retrieval and creating a database containing the encrypted exons and unencrypted non-coding regions as discussed above (page 892, fourth paragraph; page 893, last two paragraphs to page 894, first paragraph; and Figure 2) which represents receiving, as stated in instant claims 6, 7, 8. Rungsarityotin et al. describe visualizing DNA (abstract), transforming data (page 892, third and fifth paragraph), and choosing between textual and graphical output and transforming XML documents to scalable vector graphics (Figure 2 caption) which represents decrypting and regenerating, as stated in instant claims 6, 8, and 17. Rungsarityotin et al. describe a system involving converting algorithms to convertible code such as Java for data acquisition, translation, and distributing computational tasks (page 896, second paragraph). Rungsarityotin et al. describe using the grid data structure and query engine to respond to specific bioinformatics questions including a database for nucleotide chain queries (page 894, last paragraph to page 896, first paragraph), as stated in instant claims 7, 10, and 20. Rungsarityotin et al. describe computers (Figure 1), Internet2 (abstract), data structures, software technologies, programs, storage systems, files, and

databases (page 892, last four paragraphs and page 893, last paragraph), which represents a program product as stated in instant claims 14, 15, 17, 18, and 20. Rungsarityotin et al. do not describe unencrypted introns.

Patten et al. describe identifying coding and non-coding sequences (col. 34, fourth paragraph), encrypted individual exons (col. 7, lines 49-50 and 61), unencrypted introns (col. 22, lines 19-22), using in silico methods in a computer to recombine sequence strings, and regenerating a full-length sequence (col. 23, third and fourth paragraphs).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method, system, and program products of Rungsarityotin et al. by using encrypted and unencrypted sequences as described by Patten et al. where the motivation would have been to integrate and exchange information on a particular gene from different international collaborative databases in a careful, but robust manner, as stated by Rungsarityotin et al. (abstract).

Thus, Rungsarityotin et al. in view of Patten et al. make obvious claims 1-4, 6-8, 10-12, 14, 15, 17, 18, and 20.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. (e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5, 13, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rungsarityotin et al. (Pure Appl. Chem., 2002, Vol. 74, No. 6, pages 891-897) in view of Patten et al. (US 6,531,316 B1) with additional support from the Merriam-Webster online dictionary ("encrypt", "encode", "encipher", and "cipher") as applied to claims 1-4, 6-8, 10-12, 14, 15, 17, 18, and 20 above, and further in view of Jorgensen et al. (US 2004/0221163 A1).

The Merriam Webster online dictionary defines "encrypt" as "encipher or encode". The term "encode" means "to specify the genetic code for" or "converting a message into code" (see Merriam-Webster online dictionary). The term "encipher" means to convert into cipher ("a combination of symbolic letters" or "a message in code") (see Merriam-Webster online

dictionary). These definitions are not being used as prior art, but rather to support the definitions of these terms.

Rungsarityotin et al. describe a grid-enabling software technology with a grid security system including a computer processor as well as interface and storage system (i.e. memory) and method featuring a security infrastructure to transform bioinformatics genomic data from different sites to a standard format (page 892, fourth paragraph to page 893, first paragraph and Figure 1) including visualizing, analyzing, and transporting XML-based DNA data (abstract) which represents a computer-implemented security system for securing an electronic version of a nucleotide chain sequence comprising a portion of an organism's genome, as stated in the preamble of claims 1 and 8, as well as a computer hardware apparatus and program as stated in instant claim 1. Rungsarityotin et al. describe exchanging information on a particular gene or coding regions (i.e. exons) (abstract), integrating a physical map of BAC sequence from a rice chromosome (Figure 2), using BAC-end sequences and BAC fingerprint contigs and linking critical regions of interest onto a sequence-ready map (page 894, first paragraph) which represents identifying coding (i.e. exons) and non-coding regions in the nucleotide chain sequence, as stated in instant claims 1, 8, 14, and 17. Rungsarityotin et al. describe using expressed sequence tags (ESTs) treated as genes and marker names (i.e. AP002882 and RZ69) (in Figure 2 and page 894, first paragraph) along the sequence with non-coding regions merely listed as a line (Figure 2) and providing security over a network (page 892, last three paragraphs; abstract; and Figure 1) which represents selectively encrypting the sequence of only the exons identified in the nucleotide chain to provide security over a network, as stated in instant claims 1, 8, 14, and 17. Rungsarityotin et al. describe visualizing DNA data, a method featuring a security

infrastructure to transform bioinformatics genomic data from different sites to a standard format (page 892, fourth paragraph to page 893, first paragraph and Figure 1), communication between several sources of data and XML-based DNA transported for further representation and transforming XML documents (abstract; Figures 1, 2, 4) including textual or graphical output (Figure 2 caption) which encompasses the outputting, as stated in instant claims 1, 2, 8, 14, and 17. Rungsarityotin et al. describe transporting these XML-based DNA data and using a Web browser and Web-based viewer (abstract and Figure 2), as stated in instant claims 2-4, 8, 11, 12, 15, and 18. Rungsarityotin et al. describe grid technologies and recording DNA sequencing data in computerized databases to facilitate analysis, storage and retrieval and creating a database containing the encrypted exons and unencrypted non-coding regions as discussed above (page 892, fourth paragraph; page 893, last two paragraphs to page 894, first paragraph; and Figure 2) which represents receiving, as stated in instant claims 6, 7, 8. Rungsarityotin et al. describe visualizing DNA (abstract), transforming data (page 892, third and fifth paragraph), and choosing between textual and graphical output and transforming XML documents to scalable vector graphics (Figure 2 caption) which represents decrypting and regenerating, as stated in instant claims 6, 8, and 17. Rungsarityotin et al. describe a system involving converting algorithms to convertible code such as Java for data acquisition, translation, and distributing computational tasks (page 896, second paragraph). Rungsarityotin et al. describe using the grid data structure and query engine to respond to specific bioinformatics questions including a database for nucleotide chain queries (page 894, last paragraph to page 896, first paragraph), as stated in instant claims 7, 10, and 20. Rungsarityotin et al. describe computers (Figure 1), Internet2 (abstract), data structures, software technologies, programs, storage systems, files, and

databases (page 892, last four paragraphs and page 893, last paragraph), which represents a program product as stated in instant claims 14, 15, 17, 18, and 20. Rungsarityotin et al. do not describe unencrypted introns or using cipher block chain encrypting.

Patten et al. describe identifying coding and non-coding sequences (col. 34, fourth paragraph), encrypted individual exons (col. 7, lines 49-50 and 61), unencrypted introns (col. 22, lines 19-22), using in silico methods in a computer to recombine sequence strings, and regenerating a full-length sequence (col. 23, third and fourth paragraphs). Patten et al. do not describe using cipher block chain encrypting.

Jorgensen et al. describe methods, systems with a processor and memory, and program products on readable media for securing transmitting data using an encryption scheme including information from DNA tests (abstract; claims 1, 14, 48, 58; and 0085) including cipher block chaining (0033, 0119), as stated in instant claims 5, 13, 16, and 19. Jorgensen et al. describe algorithms for encryption and decryption for secure connections (0069, 0077, 0080, 0103, 0119), as stated in instant claims 1 and 14. Jorgensen et al. describe an input-output apparatus adapted to input and output data (claim 1).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method, system, and program products of Rungsarityotin et al. by using encrypted and unencrypted sequences as described by Patten et al., wherein the motivation would have been to integrate and exchange information on a particular gene from different international collaborative databases in a careful, but robust manner, as stated by Rungsarityotin et al. (abstract). It would have been further obvious to a person of ordinary skill in the art at the time the invention was made to modify the method, system, and program

products of Rungsarityotin et al. and Patten et al. with cipher block chaining as described by Jorgensen et al., wherein the motivation would have been to improve the security, stability, efficiency, and flexibility of secure data transmission and application sharing over a network, as taught by Jorgensen et al. (0018 and 0019).

Thus, Rungsarityotin et al. in view of Patten et al. and Jorgensen et al. make obvious the instant invention.

Applicant states that claims have been amended to include "exons and introns". It is noted that Patten et al. describe this limitation. Applicant summarizes other claim amendments and summarizes rebuttals from the last office action, mailed 4/23/08. Applicant argues that expressed sequence tags and bacterial artificial clones are artificial constructs which do not comprise “at least a portion of a genome of an organism”. This statement is found unpersuasive as the sequence itself does not need to come directly from the actual organism, but rather contain a sequence section that matches part of an organism’s genome. The sequence recited in instant claim 1 is electronic, so it would not be an actual sequence physically taken from an organism. Applicant reiterates "exons and introns" arguments and incorporates the arguments of instant claim 1 to also apply to claims 8, 14, and 17 as well as the 35 USC 103 rejection. The "exons and introns" limitation and other arguments have already been found unpersuasive as discussed above. Applicant argues that claims depending from independent claims 1, 8, 14, and 17 are allowable for the same reasons given for the independent claims. This statement is found unpersuasive as the independent claims are not allowable for reasons given above.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center. The faxing of such papers must conform to the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The Central Fax Center number for official correspondence is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (571) 272-0721. The examiner can normally be reached Monday through Thursday from 8 A.M. to 6:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran, can be reached on (571) 272-0720.

September 3, 2008

/Carolyn Smith/
Primary Examiner
AU 1631